

*Credit Finance Analysis Handbook
for Municipalities in the Czech Republic
(Draft)*

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FORWARD

This Municipal Credit Finance Handbook was developed as part of the United States Agency for International Development's Municipal Finance Program in the Czech Republic in a joint activity with the members of the Finance Committee of the Union of Towns and Communities. The Handbook provides a method that Czech municipalities can use to assess their debt carrying capacity by using financial performance indicators. The Handbook also shows how to use a related computer model to apply the methodology to a specific municipality.

USAID assistance in the Czech Republic has supported the emerging municipal credit finance system by working with the Czech Union of Towns and Communities, Parliament and national ministries responsible for setting overall policies, with private commercial banks interested in lending to municipalities and with the municipalities seeking financing for priority investment projects. The assistance has included a Housing Guaranty (HG) loan and short-term technical assistance.

The technical assistance provided directly to a number of Czech municipalities has focused on assisting them in securing credit financing for priority infrastructure projects. In the process USAID has sought to develop replicable successful models of capital planning, infrastructure investment and debt management that can be shared with other Czech municipalities.

The methodology and the related computer model were developed under contract with USAID by the Urban Institute of Washington, D.C. and Urban Research of Prague.

SECTION 1: INTRODUCTION

Background

As part of the decentralization enacted in 1990, responsibility for municipal services, including developing and operating local infrastructure in the Czech Republic has been delegated to local governments. The new tax and intergovernmental finance system implemented in 1993, reinforced the trend toward greater local autonomy and responsibility by giving municipalities a share of national tax revenues to spend and invest according to decisions made entirely by local elected officials. These changes have increased the importance of making sound financial decisions at the local level.

Municipal officials face difficult challenges in the management of local finances. While resources available to municipalities have grown since 1990, so too have the demands for new expenditures, including capital improvements to create or expand the infrastructure to provide better services and to meet new environmental standards. Faced with competing demands for scarce budget resources, municipalities have turned progressively to the use of credit to finance priority infrastructure projects. Loans offered on commercial terms by private the banks are becoming an important complement to more traditional state capital grants and subsidized loans. Learning how to make prudent use of credit presents new challenges that require new analytical techniques. Municipalities must project what they can realistically afford in future years. They must compare the cost and risks of alternative strategies to finance capital improvements. They must select the best approach and set the corresponding investment priorities.

Purpose of the Handbook

This handbook documents an analytical methodology to assist municipal officials in making sound financial management decisions regarding the use of credit to finance capital improvements. The methodology addresses two basic questions:

- C How much *can* a municipality borrow?
- C How much *should* a municipality borrow?

Brief Summary of the Methodology

The first steps in the methodology are to calculate the current and projected net operating results of a municipality. This is the difference between recurring revenues and non-investment expenditures. An operating surplus is the amount available to pay the maturing principal and interest payments on

new long-term debt. It determines the maximum amount a municipality *can* borrow. Refer to Section 2: Operating Surplus and Section 3: Base Case Projection for further discussion of this subject.

While the net operating surplus can provide information on how much a municipality *can* borrow, a municipality must assess the risks it faces to determine how much it *should* borrow. The next steps in the methodology use an analysis of financial performance indicators to determine whether the municipality is in a strong or weak financial condition. Past and projected trends in those indicators can show whether that condition is improving or deteriorating. The methodology then uses three alternative scenarios, a base case, worst case and best case, to look at the impact of small changes in the assumptions about future revenues and expenditures on the financial condition of the municipality. All these elements taken together provide an assessment of the level of risk. The degree of risk can help a municipality determine how much it *should* borrow. Generally, a municipality will want to borrow less if the risks are high and more if they are low. Refer to Section 4: Indicators, Section 5: Risk Assessment and Section 6: Sensitivity Analysis for further discussion of the subject.

Figure 1 shows the sequence and relation of the various steps in the credit finance analysis methodology.

A Note of Caution

The methodology documented in this handbook uses quantitative methods to look at the financial situation of a municipality. The results of the analysis *do not and cannot* provide a simple mathematical answer to the difficult questions about how much a municipality *can and should* borrow. In the end, those answers must depend on the judgement of the members of the municipal assembly who have the authority and the responsibility to approve a loan. What the proposed methodology *can do* is to analyze and present data on the current and future financial condition of the municipality to assist the members of the assembly in the decision making process. The responsibility for preparing such an analysis resides in the mayor and his financial management staff. This handbook is written primarily to assist them in meeting that responsibility.

The Related Computer Model

The various steps of the credit finance analysis methodology require many calculations using extensive data taken from the financial results of a municipality. A related computer model, developed concurrently with the methodology, performs all the necessary calculations. The computer model also prepares reports and graphs that can be used to view and present the results of the analysis. Use of the model does not require extensive knowledge of computers. On-screen input forms make it easy to enter all data and assumptions required to run the model as well as to

view the results. A menu provides access to all operations, including data entry, printing and every step of the methodology.

The standard version of the computer is available in either Czech or English language versions. There also is an expanded version of the model that operates simultaneously in both Czech and English. In that version, the user can print all the tables created by the model in both Czech and English.

Requirements for using the computer model single language version:

- An IBM PC compatible computer with a 3.5" diskette drive
- A hard disk drive with at least 3 MB of free space available
- MS Excel Version 5.0
- A printer with graphics capability

The dual language version of the computer model runs only from a hard disk drive. It requires a hard disk drive with at least 5 MB of free space available.

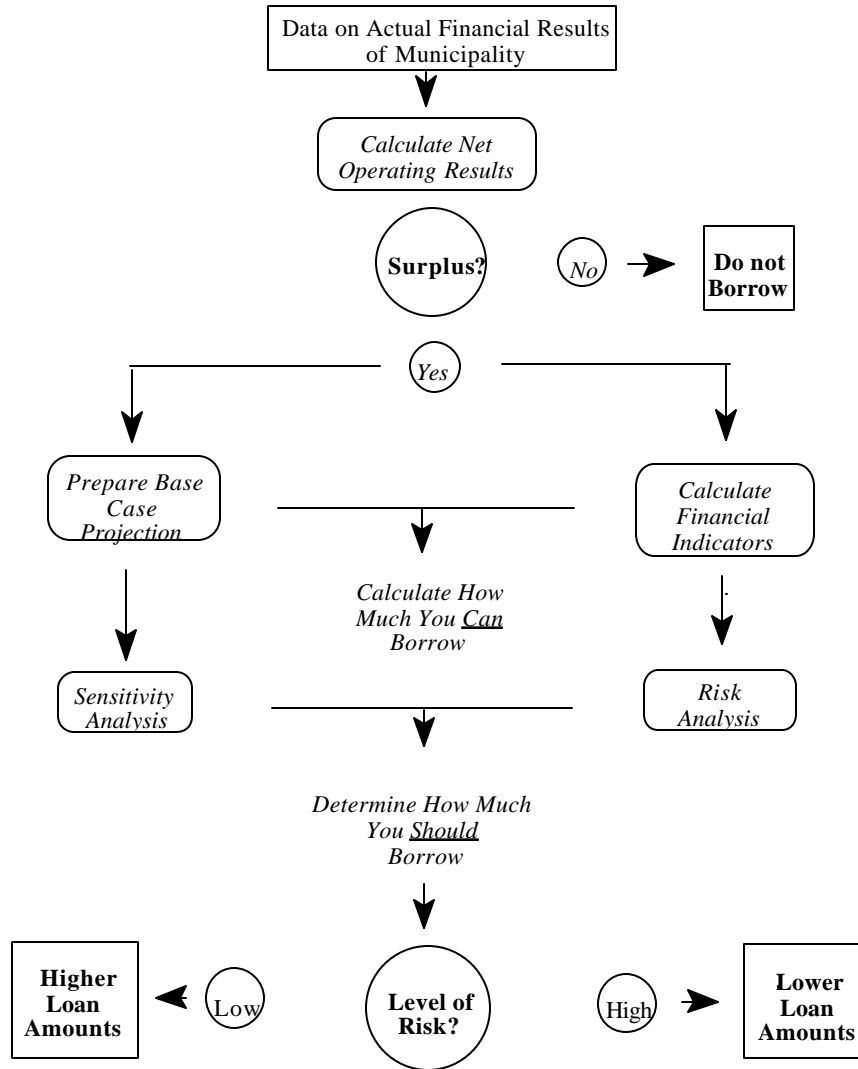
Organization of this Handbook

There is an individual section of this handbook for each step of the methodology. The section explains how to perform the calculations and complete the analysis for each step and suggests how to use the results. Each section also includes instructions on how to use the related computer model to complete the step. The sections are as follows:

- Section 2: Operating Surplus
- Section 3: Base Case Projection
- Section 4: Financial Performance Indicators
- Section 5: Risk Analysis
- Section 6: Sensitivity Analysis
- Section 7: Capital Investment and Financing Plan

Finally, the handbook includes several technical appendices that provide detailed information related to the various steps in the methodology, as follows:

- Appendix 1: Recurring and Non-recurring Revenues
- Appendix 2: Computer Model: Screens and Menus
- Appendix 3: Computer Model: Printed Reports
- Appendix 4: Computer Model: Advanced Functions



SECTION 2: OPERATING SURPLUS

This section describes how a municipality can calculate its net operating results. This is different than the total surplus or deficit which municipalities currently calculate, which looks at the difference between all revenues and all expenditures. The net operating results look only at the difference between non-investment (or operating) expenditures and recurring (or operating) revenues.

How to calculate the net operating results

The calculation uses the basic data included in the standard municipal income and expense report (form U...1-12). This form includes all revenues and expenditures by line-item for any given year, including budget and actual information. It shows investment and non-investment expenditures. It shows the source of all revenues but it does not differentiate among them. The calculation of the net operating results requires a completely new approach which disaggregates total revenues into recurring and non-recurring revenues. The concept of recurring and non recurring revenues is critical to the whole understanding of the methodology.

Recurring revenues are those that derive from an existing national law or municipal resolution that provide a continuing flow of resources for the municipality year after year. They include local revenues, shared national taxes and recurring state operating subsidies. Non-recurring revenues are those that are authorized only for a specific year and may or may not provide resources for the municipality in another year. They include all other revenues. *Refer to Appendix 1 for a detailed explanation of the calculation of recurring and non-recurring revenues.*

Total expenditures already are disaggregated in the U...1-12 into investment and non-investment expenditures. The net operating results are determined by subtracting the non-investment (operating) expenditures from the recurring revenues. This will produce:

- Ⓒ A net operating surplus when recurring revenues are greater than operating expenditures
- Ⓒ A net operating deficit when operating expenditures are greater than recurring revenues

How to calculate the operating surplus using the computer model.

Start the model from Excel by selecting the menu “File” in the top left of the screen. From that menu select “Open.” The first time you use the model go to the external disk drive on your computer that uses “31/2” diskettes, select the file “Model.xls” and press “OK.” This will load the model.

There will be a new menu at the top right hand of the screen called “Credit Model.” This is the main menu from which you will make all the choices to run the model. Select the menu and then select “Enter Data.” A screen will appear, as shown in Dialog 1 of Appendix 2. You will need the U...1-12 and U...3-02 for the most recent year for which there are actual results for the entire year. It also is useful to enter data for all prior years up to and including 1993. Select a year and the category of data you want to enter. A data input form will appear, as shown in Dialog 2 in Appendix 2. Repeat these instructions until you have completed entering all the data for each year for categories:

- I.A. Revenues and Other Sources of Funding
- I.B. Operating Expenditures and Capital Investments

If there is no amount to enter in a field, you may leave it blank or enter the number 0.

Once you have finished entering all the data, press “Finish.” The model will now calculate the net operating results automatically. To view the results on screen go back to the main menu and select “View,” then select “Amount You Can Borrow.” A screen will appear, as shown in Dialog 5, Appendix 2. At this point, it will show only the net operating results for the years for which you have entered data. This same screen will show future net operating results at a later point in the implementation of the methodology.

After you have worked with the model and entered your own data, you may want to save the model under a new name, such as the name of your municipality. In any future use of the model, you would then open that file. This would preserve the base model free of any data and allow you to use it to conduct an analysis of other municipalities. To save the model under a new name select “Save Data Files As” from the main menu and follow the instructions. You also may continue to use the name “Model.xls,” if you desire. If so, select “Save Data File” from the main menu. Because the model itself is a large file, you will find it much easier to save all your files to your hard disk. You should save your data after completing each step of the methodology.

How to use the results

Municipalities that obtain a loan must provide for payment of the debt service resulting from the maturing portion of the debt and interest on the remaining balance. Since the municipality will be making debt service payments each year until it has repaid the loan fully, the conservative and prudent approach is to plan on using only recurring revenues to make the payments. Remember that recurring revenues are those that provide a continuing flow of resources for the municipality year after year.

A municipality that has a current net operating deficit has no free recurring revenues available for debt service. It should not consider entering into any new loans until it has taken steps to identify and address the causes of the problem. A municipality that has a current net operating surplus can consider borrowing. The amount it *can* borrow, however, will depend not just on the operating surplus in the current year. The municipality must look as well at its future operating results, since the payment of debt service will extend several years into the future. For this, it must prepare a projection of its recurring revenues and non-investment expenditures. The next section explains how to prepare and use such a projection.

SECTION 3: BASE CASE PROJECTION

This section describes the “base case” projection. This name will differentiate this projection from the “best” and “worst case” projections that are used in the sensitivity analysis later in the methodology. (See Section 6: Sensitivity Analysis) Because projections become less useful as they extend farther into the future, the base case covers only the next five years. Currently, that would include the period until the year 2000.

How to Prepare the Projection

The projection begins with certain assumptions about the future behavior of recurring revenues and non-operating expenditures. The assumptions are simple in concept. They state whether these revenues and expenditures will grow or decrease and at what rate. It is not as simple to determine what assumptions to use.

There are several techniques available to help prepare the assumptions. Looking at past years can show how revenues and expenditures have been changing. These are called trends. The fact that the current system of municipal finances really only began in 1993 and that it has suffered changes every year since then limits the usefulness of trends as the basis on which to project the future. Another technique is to determine what causes revenues and expenditures to increase or decrease and to base the projection on those factors. For example, certain expenditures, such as health services, grow when the population grows. Certain local revenues, such as dog fees, may have maximum amounts. If the municipality already is charging the maximum allowed, this revenue may not grow at all.

When there is little knowledge and information on which to base the assumptions, it may be better to use broad categories of revenues and expenditures. When in doubt, it also is better to use a conservative assumption. In the case of the base case projection, a conservative assumption is one that leads to lower revenue estimates and higher expenditure estimates. This will tend to underestimate the net operating results. It is the most prudent approach on which to base the first estimate about how much a municipality *can* borrow.

Finally, many municipalities already have debt service obligations. It is very important to include these exact amounts in the projections.

Subtracting projected non-investment expenditures from projected recurring revenues will show what the net operating results will be in future years.

How to use the computer model to prepare the base case projection.

First enter the additional data that you will need to prepare the projection. Select “Enter Data” from the main menu. A data input form will appear, as shown in Dialog 1 of Appendix 2. You will need the U...1-12 and U...3-02 for the most recent year for which there are actual results for the entire year. It also is useful to enter data for all prior years up to and including 1993. Select a year and the category of data you want to enter. A data input form will appear, as shown in Dialog 3, Appendix 2. Repeat these instructions until you have completed entering all the data for each year for categories:

- IV.A. Operating Expenses by Chapter
- Future Debt Service on Existing Loans

If there is no amount to enter in a field, you may leave it blank or enter the number 0. Once you have finished entering all the data, press “Finish.”

Now you need to enter the assumptions that the model will use to prepare the base case projection. The computer model assumes that recurring revenues will grow only slightly faster than the expected rate of inflation. This is a very conservative assumption that shows recurring revenues growing at a much slower pace than the trend for the period from 1993 to 1995. During that period recurring revenues grew much faster than the rate of inflation. Appendix 4 explains how to enter your own revenue projections.

You will need to enter your assumptions for non-investment expenditures. The computer model allows you to make separate projections of non-investment expenditures by chapter. From the main menu select “Base Case,” then select “Model Projections.” A data input form will appear, as shown in Dialog 4 of Appendix 2. For each chapter, you need to decide whether to use “current trends”¹ or “inflation” as the basis for projecting future expenditure levels in that chapter. To help you in this process, you can view the trends for each chapter by pressing the button “View Trend Constant” next to any of the chapters. That will show you the actual and projected non-investment expenditures per capita for that chapter in constant 1991 crowns, that is, without the effect of inflation. Selecting “trends” will use these numbers in the base case projection. Selecting “inflation” will increase the value of the expenditures in the most recent year for which you have entered actual

¹ The computer model uses the “trend” formula available in Excel. This formula returns values along a linear trend. It fits a straight line using the method of least squares, where the formula is $Y = Mx + B$. Further analysis of the changes in municipal non-investment expenditures may suggest the need for a different statistical method to compute the trends.

data at the expected rate of inflation in future years. Appendix 4 explains how to enter your own expenditure projections.

When you have finished entering the assumptions, press “OK”. The model automatically prepares the projection to the year 2000. To view the results on screen select “View” from the main menu and then “Amount You Can Borrow.” A screen will appear as in Dialog 5, Appendix 2. To print the results select “Print Reports” from the menu. Then select “Base Case” from among the choices.

How to Use the Results

As in the prior step, a projected operating deficit in any of the years suggests the need to postpone any borrowing until the municipality has identified and addressed the causes of the problem. If the current and all future years show a net operating surplus, then a municipality can consider entering into a loan. The smallest surplus in any of the years will determine the maximum amount the municipality can count on to pay debt service at a constant level during the entire period of the projection. A useful way to express this amount is as a percent of recurring revenues. That is, the projected maximum debt service is estimated to be 5% or 10% or 15% of recurring revenues. This is the “debt service ratio” which is used often to describe how much a municipality can or should borrow. Section 4: Indicators shows how to use this and other ratios as part of a credit finance analysis.

If the municipality knows at what interest rate and for how many years it can borrow, it can convert the projected debt service amount to a loan amount. That will show how much the municipality *can* borrow.

How to calculate the amount the municipality *can* borrow using the computer model.

To calculate how much you *can* borrow, select “View” from the main menu then “Amount You Can Borrow.” A data input screen will appear as shown in Dialog 5 of Appendix 2. It will already show the amount of the smallest surplus in any of the years of the base case projection. Enter your assumptions about the interest rate and number of years for which you can obtain a loan. Press “Calculate.” The screen will show the amount of the loan. This is the estimate of how much the municipality *can* borrow. By changing the assumptions about interest rate and number of years and pressing “Calculate,” you can see effect of these changes on the amount you *can* borrow.

SECTION 4: INDICATORS

This section explains briefly the concept and structure of the financial performance indicators used in the credit finance analysis methodology to help determine how much a municipality *should* borrow.

Indicators express the financial information of a municipality as a ratio or percent obtained by dividing one set of financial data by another. For example, an indicator can express net operating results as a percent of recurring revenues. Section 3 mentioned the debt service ratio that looks at payments on loans as a percent of recurring revenues. As such, indicators are a useful tool for comparing the financial information of one municipality from more than one year. Indicators also make it possible to compare the performance of one municipality with that of another. It is this ability to provide a comparison of results over time or among more than one municipality that makes performance indicators so valuable as a financial analysis tool.

A benchmark is a target of performance which is used to interpret indicators. It helps determine whether the particular value of an indicator in a specific municipality shows strong or weak performance. A benchmark is based typically on an industry standard or in absence of a standard, on proven historical trends or comparative data.

How to Calculate the Indicators

The indicators used in the municipal credit finance analysis methodology are grouped into seven categories that look at revenues, expenditures, net operating results, actual to budget results, relative growth, annual debt service and liquidity and outstanding debt. The calculation of these indicators uses the basic data included in the standard municipal income and expense and balance sheet reports. It also relies on additional non-financial information, including the population of a municipality and the number of municipal employees. The actual computation of each indicator is simple. In most cases it involves the division of one number by another. The only difficulty derives from the large number of indicators that the credit finance analysis methodology employs. Over time, experience will show which of these indicators are most valuable in analyzing the present and projected financial condition and debt position of a municipality. This will make it possible to reduce the number of indicators used in the methodology.

How to calculate the indicators using the computer model.

If you have completed the prior sections, the model already has most of the data it uses to calculate the financial performance indicators. If you have not completed those steps, refer to the instructions on entering data in Sections 2. and 3.

To enter the remaining data used in calculating the indicators, select “Enter Data.” A data input form will appear as shown in Dialog 1, Appendix 2. Select “I.D. Other Non-Financial Data.” At this time, you will only need to enter the information on the population of the municipality and on the number of municipal employees. When you have entered this information, press “Finish.” The model will calculate the indicators automatically. You cannot view the indicators on screen. To see the values of all the indicators for your municipality, select “Print Reports” from the main menu and then select “Financial Performance Indicators.”

How to Use the Results

Each category of indicators provides specific insights into a different aspect of the finances of a municipality. The analysis of the indicators highlights the strengths and weaknesses of the municipality. It also helps to understand the extent to which the municipality can manage its finances over time to maintain a sound financial condition.

Revenues These indicators are designed to assist in understanding the structure of revenues in general and especially of recurring revenues which are so important to the analysis of how much a municipality *can* borrow. How do recurring revenues compare to total revenues? Which is the most important source of recurring revenues? Do what extent does the municipality rely on revenues that it receives from the national government? A key issue is to what extent the municipality has control over the future level of recurring revenues. The municipality depends on decisions made by the National Parliament to determine what revenues it will receive from shared national tax revenues or state subsidies. If a large share of recurring revenues fall in these two categories, the municipality has relatively little control over its future recurring revenues. The mere fact of depending on decisions made by others becomes an element of risk.

Expenditures These indicators look at the relative importance of operating versus capital investment expenditures. They also look at the behavior of expenditures relative to the size of the local population and to the number of municipal employees. Finally, they also look at the nature of the organizations that actually incur the expenditures. Together they provide an understanding of the

changing nature of the expenditures, of their growth and of the trends in the role of budgetary, contributory and other organizations. Many indicators in this category are descriptive, that is, they do not help measure performance or levels of risk. At this point, the critical issues are the degree to which the municipality relies on contributory organizations to deliver services. The assumption is that there is less control over expenditures of such organizations and hence higher risk. Eventually, as more comparative data becomes available, it will be possible as well to measure the relative efficiency of the operating expenditures of a municipality.

Net Operating Results Sections 2 and 3 explained the concept of net operating results and showed how it can help answer the question about how much a municipality *can* borrow. These are among the most basic indicators. They look at the extent to which recurring revenues match recurring expenditures. The surplus of revenues over expenditures is the amount available to fund new expenditures including new debt service, which is fundamental to answering the question how much a municipality *can* borrow. These indicators help provide an understanding of the trends in net operating results and on the degree to which they depend on the different sources of recurring revenues.

Actual to Budget These indicators look at the ratio of the initial and final budget projections to actual results. They are designed to analyze the degree of accuracy of budgets. They recognize that municipal budgeting practices currently involve several budget revisions during a fiscal year. They also look at the ability of the municipality to prepare an accurate budget early in the year. Over time, it will become harder to control the level of operating expenditures from year to year. The underlying cost components will become less discretionary. Structural expenses, such as the payroll and debt service, which are more difficult to reduce, will become a larger part of overall operating expenditures. At that point, the ability to prepare an accurate budget early in the year will become critical to the financial success of the municipality. Together, the indicators help understand how well a municipality can plan and manage its finances which is critical to the financial success of the municipality over time.

Relative Growth These indicators look at how the change in revenues compares to the change in expenditures over time. The fact that a municipality has an operating surplus or deficit in one year does not necessarily indicate what will happen in the future. These indicators also look at the relative importance of expenditures made through budgetary and contributory organizations. Which is growing faster? The key question is whether the growth of operating expenditures is matched by the growth in recurring revenues. Faster growing expenditures will eventually lead to a deficit, particularly if revenue growth decreases. Conversely, faster revenue growth will generate or maintain a future surplus.

Debt Service These are the classic indicators to monitor debt and the ability of a municipality to meet its debt service obligations. Annual debt service refers to the resources accumulated to pay the maturing debt principal and interest. The indicators are most useful when used in conjunction with all the preceding indicators. The lower the percentage of debt service to recurring revenues and current assets such as cash, the better. Conversely, the higher the ratio of debt service to revenues and current assets, the greater the burden to the municipality of meeting the payments on its outstanding loans. A municipality with lower risk levels and stronger performance in the other categories, such as net operating results and structure or recurring revenues, probably can afford higher levels of debt service.

Liquidity and Outstanding Debt The analysis of indicators of liquidity looks at the nature and amount of resources immediately available to a municipality to meet its current obligations, including debt service. The analysis of outstanding debt looks at the structure and amount of long-term debt liabilities, those greater than one year. Both rely on data from the balance sheet (U...3-02). While the credit finance methodology includes both sets of indicators, currently they are of limited use because the data from municipal balance sheets has not proven to be as consistent and reliable as the data from income and expense statements. These data deficiencies impair the use of key indicators of liquidity and of the debt position of municipalities. These are basic indicators. Municipalities will not have a complete understanding of their debt carrying capacity until the issue is addressed.

A Note of Caution

In the Czech Republic, currently there are no benchmarks based on several years of data and on a broad profile of Czech municipalities. In part this reflects the limited number of reference years. The base year for any analysis of municipal finances in the Czech Republic would have to be 1993, when the new system of intergovernmental transfers was initially implemented. Conditions have continued to change since 1993. This limits the use of trends to analyze and interpret the change in financial condition of a given municipality. Another limitation in the use of indicators is the small number of municipalities for which the value of the various indicators have been calculated. Without access to a common data base there is no simple, practical way to look at the finances of over 6,500 municipalities. The proposed municipal credit finance analysis methodology will not be fully useful until there are benchmarks based on longer historical periods and broader comparative data. For now, the model relies on tentative benchmarks, as described in this section. This is only an interim solution at best.

SECTION 5: RISK ASSESSMENT

This section explains how a municipality can use the financial performance indicators to assess the risks it confronts in managing its future financial condition and debt position. The questions of risk look at internal and external factors. Those that are internal deal with the degree to which the municipality has shown that it has the ability to plan and manage its revenues and expenditures to generate a consistent operating surplus. The external factors deal with the degree to which the municipality is subject to decisions that are outside its control that can affect its future financial condition. The level of risk that a municipality confronts is one of two elements that the credit finance analysis methodology uses to determine how much a municipality *should* borrow. The other is the sensitivity analysis described in Section 6.

How to Prepare a Risk Assessment

The first step in the risk assessment is to determine the current financial condition of the municipality. This is called the *status* of the indicators in the methodology. For each of the key indicators, there is a tentative benchmark. By comparing the value of the indicator against that benchmark, a municipality can assess whether its current status is strong, acceptable or weak. For example, one of the indicators looks at the ratio of operating expenditures to recurring revenues. If the ratio in a particular municipality is less than .95, this is considered strong. More than 1.00 is weak. Anything in between is acceptable. For several of the indicators there is no current benchmark for the reasons explained in the Note of Caution at the end of Section 4. This means that there is not enough information available to assess the status of that indicator at this time. This will change as there is better and more extensive comparative data among municipalities.

The second step in the risk assessment looks at the *trends* in the indicators of a municipality over several years. Currently, there is sufficient data to calculate the indicators for 1993, 1994 and 1995. Prior years are not relevant to the current financial reality of municipalities. Basically, this assessment looks at either the value or the score for any given indicator over these three years to determine if the situation is improving, stable or deteriorating.

The final step in the risk assessment is to combine the status and trend scores to form a judgement of the level of *risk*. This is expressed as high or low risk. Thus, for each indicator there are three (3) scores:

- Status: Strong (S), Acceptable (A), Weak (W)
- Trend: Improving (I), Deteriorating (D), Stable (S)

– Risk: High, Watch, Acceptable, Low

How to perform the risk assessment using the computer model

If you have completed all the instructions on the use of the model described in Sections 2., 3. and 4. you have all the information you need to prepare the risk assessment. The model has done all the calculations and the scoring for you. Select "View", then "Risk Assessment" from the main menu. A screen will appear, as shown in the form of Dialog 6 of Appendix 2. This screen includes the eighteen (18) most critical indicators, grouped into three categories that measure the risk related to revenues, expenditures and debt. The screen shows the value of each indicator for the two most recent years for which you have provided actual data (currently 1994 and 1995). It also shows the corresponding scores for *Status*, *Trend* and *Risk* for each indicator. To see the overall score for *Risk* in each of the three categories, that is revenues, expenditures and debt, select a category from the window at the top left of the screen. Pressing the button "Legend" at the bottom left of the screen will provide a written explanation of the indicators in the category you have selected. After you finish viewing the Risk Assessment for current years, press the button "Projected" at the bottom of the screen to view the same analysis for the last two years of your projection (currently 1999 and 2000). Press "Actual" to return to the prior screen. Press "Finish" when you are done. The model uses tentative benchmarks to prepare the risk assessment. Appendix 4 explains how to enter your own benchmarks.

To print a copy of the report, select "Print Reports" from the main menu, then "Risk Assessment."

How to Use the Results

In order to interpret the results, you need to see the scores from the previous section on status, trend and risk. Let us look at some examples. Strong status results and improving trend results is the lowest risk category. Low risk means the municipality may wish to borrow the total amount or substantially the amount that it *can* borrow from the net operating results analysis in Section 3 of this manual. On the other hand, weak status results and deteriorating trend results represent the highest risk category resulting in the conclusion that the municipality *should* borrow far less of that amount. There are many scenarios which the municipality may face including of which the risk assessment will range between high and low. For example:

Status	Trend	Risk	Should Borrow?
Strong	Improving	Lowest	Most
Strong	Stable	Low	More
Strong	Deteriorating	Acceptable	Somewhat Less
Acceptable	Improving	Acceptable	Somewhat Less
Acceptable	Stable	Acceptable	Somewhat Less
Acceptable	Deteriorating	Watch	Considerably Less
Weak	Improving	Watch	Considerably Less
Weak	Stable	High	Least
Weak	Deteriorating	Highest	Least/ Do Not Borrow

Any given municipality will score better on some indicators than on others. Municipal officials need to look at the sum of results of the risk assessment to form a global judgement about how much the municipality *should* borrow.

SECTION 6: SENSITIVITY ANALYSIS

This section explains how to perform a sensitivity analysis to look at the impact of new revenue and expenditure assumptions on the net operating results calculated as part of the Best Case Projection prepared in Section 3. In the Base Case, you made some assumptions about the future. You may have felt that you were being too optimistic or too pessimistic. This analysis allows you to look at a series of “what if” scenarios in which you vary those assumptions. The results of the sensitivity analysis are the final step in determining how much the municipality *should* borrow.

How to prepare the sensitivity analysis

The first step is to prepare a best case projection. This is the one in which you use the most optimistic assumptions about the future. This may include more aggressive revenue assumptions and/or more conservative spending patterns. The most practical way to think of this is to express future revenues and expenditures as a percent of those you estimated in the base case. For example, you could express revenues as 105% of base case revenues and expenditures as 90% of base case expenditures. This would produce a scenario in which future net operating results are higher.

The next step is to prepare a worst case scenario. This is the most pessimistic set of assumptions that may include more aggressive expenditure assumptions and/or more conservative revenue patterns. For example, you can estimate revenues at 95% of the base case and expenditures at 103% of the base case. This scenario should produce the lowest future net operating results.

The most useful sensitivity analysis will be the one that relies on relatively small changes in the assumptions for both the best case and worst case scenarios.

How to use the computer model to prepare the sensitivity analysis

If you already prepared the base case projection as described in Section 3., you can now proceed to the sensitivity analysis. First select “Best Case” from the main menu. A data input screen appears, as shown in Dialog 7 of Appendix 2. Next to each of the categories that appear in this screen, enter a percent that shows by how much you want to change the base case assumptions for that category. If you want to retain the base case estimates use 100%. If you want to increase the base case estimates, use a number higher than 100%. For example, 103% will increase the base case estimates for that category by 3%. If you want to decrease the base case estimates use a value lower than 100%. For example, 90% will decrease the base case estimates by 10%. In the case

of the best case projection you will want to increase the revenue assumptions and decrease the expenditure assumptions. When you are finished enter "OK."

Now select "Worst Case" from the main menu. A data input screen appears, as shown in Dialog 8 of Appendix 2. Note that it is identical in form to the one used in preparing the best case. Enter your revised assumptions following the same principles as in the best case. Anything over 100% increases the base case estimates. Anything less than 100% decreases those estimates. In the case of the worst case projection you will want to decrease the revenue projections and increase the expenditure projections. When you are finished enter "OK."

To view the results on screen, select "View" from the main menu. There are two views you can select. Select "Sensitivity Analysis: Amount You Can Borrow." A screen will appear, as shown in Dialog 9(a), Appendix 2. This will show you the impact of the "Best" and "Worst Case" scenarios on how you *can* borrow. Select "Sensitivity Analysis: Operating Surplus." A screen will appear, as shown in Dialog 9(b), Appendix 2. This will show you the impact of the "Best" and "Worst Case" scenarios on the operating surplus. To see a printed report, select "Print Reports" from the main menu and then select "Base Case," "Best Case" and "Worst Case." You also can view the results in the form of a graph. Select "Print Reports" from the main menu, then "Base Case Graph," "Best Case Graph" and "Worst Case Graph."

How to Use the Results

The sensitivity analysis allows a municipality to view the extent to which changes in revenue and expenditure assumptions impact its financial condition. It allows a municipality to see how a slight change in one or more of the assumptions from the base case scenario can impact the financial condition and affect the net operating results in Section 3 or the risk assessment in Section 5. As a general rule, the more sensitivity to change, the higher the risk to borrow; conversely the less sensitivity to change, the lower the risk to borrow.

For example a revenue growth change of .95 of the base case projection may mean a significant reduction in revenues that reduces dramatically the net operating results in Section 3 and/or changes the risk assessment in Section 5 from Low to High. This would represent a sign to the community to be very conservative in determining how much it *should* borrow. Conversely, the same .95 of the base case revenue assumption may not materially change the results of the net operating results nor the risk assessment. Thus the municipality may conclude that the sensitivity is low and thus it may be more aggressive in deciding how much it *should* borrow.

SECTION 7: CAPITAL INVESTMENT AND FINANCING PLAN

This section explains how a municipality can combine the answers to the questions on how much it *can* and *should* borrow to analyze its capital investment and financing options. While resources available to municipalities have grown since 1990, so too have the demands for new capital improvements to create or expand the infrastructure to provide better services and to meet new environmental standards. Financial resources available from own sources, such as the sale of assets, and from external sources, such as state capital grants and subsidized loans, may not be sufficient to cover the full cost of all planned capital improvements in a municipality. This difference between the resources available to the municipality and the full cost of planned capital improvements determines how much a municipality *needs* to borrow from private the banks on commercial terms.

Municipalities must compare the cost and risks of alternative strategies to finance capital improvements with the importance and priority of specific capital improvement projects. They must select the best approach and set the corresponding investment priorities. The end result is a Capital Investment and Financing Plan.

How to analyze capital investment and financing options

The first step is to conduct a complete analysis of the merits of individual projects. There are several techniques and approaches that a municipality can use in this process. They include economic, social and environmental analyses that look at the merits of the project in the broader context. A financial analysis will show to what extent the project could be self-financing. If all or part of the cost of operating and financing a project can be repaid from the revenues generated by the project itself, then the municipality may not need to provide as much, if any, financing for project operating and capital costs from its own budget. A technical analysis may show that the design modifications can lower the cost of the project. It is beyond the scope and purpose of this Handbook to review and discuss these techniques. The important point is that before considering a project, a municipality should consider all the factors included in these various types of analysis. This need not be complicated or expensive. Sometimes, a municipality may gain valuable insights simply by asking the right questions about a project before making a final decision to proceed.

The next step is to look at the various projects together. The analysis must span several years. From the prior analyses, the municipality will know the total cost of the projects and the portion of those costs that it must finance from its budget. Usually, the construction of the projects will extend over more than one year. They may require funding from more than one budget year. In the likely event that the total combined cost of the projects exceeds what the municipality can afford, the municipality will need to decide which projects are more important. Failure to look at all the projects

together over a span of years, may result in lack of funding for projects already under construction. Or, it may force the municipality to defer a relatively more important project in order to complete the construction of a less important project initiated in prior years. The most efficient and effective approach is to develop a multi-year capital investment and financing plan. The current year portion of that plan can be incorporated in the budget of the municipality.

How to use the computer model to analyze capital investment and financing options

At this point you already have some idea of how you *can* and *should* borrow. The model allows you to test these conclusions against the actual investments you would like to finance from your budget.

You may also want to see what the results are if you include other resources, such as state capital investment subsidies. Finally, you may want to include actual loan amounts, including both state subsidized loans and loans on market terms from commercial banks. The computer model allows you to add these assumptions and to see how they affect the results in all three projections - base, best and worst cases. The model also will show you whether you have sufficient resources available to cover the full cost of all your capital improvement projects. By changing the various assumptions, you can quickly and easily consider different options regarding total investment costs and sources of financing. This is the final analysis before making a definitive decision about borrowing.

Select "Investment Assumptions" from the main menu. This provides three choices. Selecting "Subsidies" takes you a data input screen as shown in Dialog 10 of Appendix 2. You can enter the amount for state capital investment grants and subsidized loans in any of the five years of the projection up to a total of ten grants and ten subsidized loans over the entire period. If you enter any loans, also enter the amount of any loan repayments that would fall between 1996 and 2000. With the grace period offered on subsidized loans, there may be no payments at all that come due before 2000. When you are finished, enter "OK."

Now select "Loans" which takes you to a data input screen as shown in Dialog 11 of Appendix 2. Here you will enter assumptions about commercial loans. You can enter up to two different loans in any of the five years of the projection for a total of up to ten commercial loans over the entire period. Do not enter assumptions for more than two loans for the same year. For each loan indicate the interest rate, the number of years to repay the loan, any grace period on the payment of principal and any balloon payments. Also indicate how you will be paying, either in equal installments of principal and interest or in equal installments of principal with declining payments of interest. You can use different assumptions for each loan. When you are finished, enter "OK."

Now select “Projects” which takes you to a data input screen as shown in Dialog 12 of Appendix 2. Here you will enter assumptions about the total cost of each of ten projects that you will finance with the proceeds from the grants and loans. For each project, select one of five categories: “Water/Waste Water,” “Energy/Heating,” “Roads/Transportation,” “Housing,” or “Other” if the project does not fit one of the previous four categories. Enter as well the total cost and the annual investments. Also indicate the portion of the total cost that you will finance from the budget of the municipality. The model will consider only the percent of the cost attributable to the municipality. When you are finished, enter “OK.”

To view the impact of these new assumptions on screen, select “View” from the main menu and then select “Capital Investment Analysis.” A screen will appear, as shown in Dialog 13, Appendix 2. It shows the total resources available in your budget by year to finance capital improvements, the total cost of investments by year and the overall surplus or deficit. When you are finished, press “OK.” By pressing the button “Detail” under “Other Non-recurring Revenues” you can view the sources of these revenues, including: Loan/Bond Proceeds, Property Sales and Other. By pressing the button “Detail” under “Total Investments in Infrastructure Projects,” you can view the annual investment by each of the five categories of projects - Water/Waste Water, Energy/Heating, Roads/Transportation, Housing or Other.

To see a printed report, select “Print Reports” from the main menu and then select “Base Case,” “Best Case” and “Worst Case.” You also can view the results in the form of a graph. Select “Print Reports” from the main menu, then “Base Case Graph,” “Best Case Graph” and “Worst Case Graph.”

How to use the results

The analysis of capital investment and financing options will not provide a single, correct version of the multi-year capital investment and financing plan. Some choices may be obligatory. For example, the municipality may learn that it simply cannot afford all the projects it had been planning. It must postpone one or more projects. There also will be many viable alternative scenarios. Generally, these will involve situations in which one set of variables, such as total level of borrowing and related risk, affect and are affected by another set of variables, such as the total level of capital investments. For example, one scenario might involve higher levels of borrowing and risk to ensure financing for all proposed projects. Another may be the reverse, with lower levels of borrowing and risk at the expense of one or more of the proposed projects.

These situations in which higher levels of one variable mean lower levels of another are called tradeoffs. The two prior scenarios show the tradeoff between borrowing risk and total investment.

Other tradeoffs include non-investment (operating) expenditures versus investment (capital) expenditures. For example, the municipality might decide to spend less on culture or recreation services and more on expanding waste water collection and treatment facilities.

The choice among tradeoffs is not easy. The factors affecting the choice may be highly subjective. How much risk is too much risk? What is the relative importance of non-investment(operating) expenditures versus investment (capital) expenditures. The methodology described in this Handbook can help to identify the issues and choices in factual terms. It does not identify a single "best" choice. Once the municipality has identified the various viable scenarios and the related tradeoffs using this methodology, it should provide an opportunity for the citizens of the community to express their views. Eventually, the Municipal Assembly must make the final decision regarding the capital improvement and financing plan. Public involvement and participation will build support for that plan. It also will strengthen local democracy.

APPENDIX 1

RECURRING AND NON RECURRING REVENUES

Critical to the understanding of the methodology and the model is a comprehension of how recurring and non-recurring revenues are calculated. The objective of this appendix is to provide a detailed explanation of that calculation.

The calculation uses mostly data already available in the U...1-12 report. This report contains both revenue and expense data. The appendix uses only the revenue portion (Section III) of the U...1-12. The description below includes the reference to line in which the data is recorded in the U...1-12 so that you can refer to the appropriate section and lines of that report.

Recurring revenues include all or part of the revenues reported in the following categories:

Own Budgetary

Items 21

Items 24

The following sections explain the recurring revenue portions of each of these categories:

Own Budgetary

Own budgetary revenues totals are reported on line 105 of U...1-12. The details are reported on lines 80 through 104, including the grouping of Items 12, 14, 15, and 18. All own budgetary revenues are classified as recurring revenues. It represents the sum of all own budgetary revenues as reported on line 105 of U...1-12.

Items 21

Items 21 consist of many different revenue items. The total is reported on line 131 of the U...1-12. All the items in this category are recurring revenues, except the items in lines 114, 116, 120 and 130. Therefore, to calculate this portion of recurring revenues subtract the value in those lines from the total in line 131, as follows:

Description

U... 1-12 Line Number

Total grouping of items 21	131
Less	
State insurance	114
Property sales	116
Other random revenues	120
Gifts	130

Items 24

The groupings of Items 24 include various subsidies and transfers. The total of grouping of Items 24 is reported on line 152 and the detailed subsidies and transfers are reported on lines 141 through line 151 of the U...1-12. Within this grouping, only line 142, Total Subsidies, is classified as recurring revenues. The other lines are classified as non recurring. Not all the Total Subsidies are recurring revenues. To complete the calculation, you need to obtain the investment portion of this line item from your accounting records, since that number is not reported separately in the U...1-12. Subtract that number from the total in line 142. The remainder is the recurring revenue portion of Total Subsidies.

APPENDIX 2

COMPUTER MODEL: SCREENS AND MENUS

APPENDIX 3

COMPUTER MODEL: PRINTED REPORTS

APPENDIX 4

COMPUTER MODEL: ADVANCED FUNCTIONS

This appendix describes several functions of the computer model that are not described in the main body of the Handbook. These features fall into two categories:

- Those that provide additional information or insights to the user
- Those that provide greater flexibility and control to the user

Some of these features are not accessible through the credit model menu. They require greater skills in operating an Excel spreadsheet. Other features require information that is not readily available in the standard municipal budget and balance sheet reports. The user must have the ability to develop that information outside the model.

Additional information

How to view the Base, Best and Worst Case projections in constant 1991 crowns

The model already includes data on the inflation rate in the Czech Republic from 1991 to 1995. It also includes estimates of future inflation to the year 2000. Inflation sometimes makes it difficult to analyze and understand financial information. Did revenues grow fast enough to offset the increase in costs due to inflation? Have expenditures grown simply because of inflation or is it costing me more to provide services today than in the past? The model provides a quick way to convert all the data that appears in the Base, Best and Worst Case projections to constant 1991 crowns. To do this, the user must move to cell O319 in the first worksheet ("Worksheet English"), type in the letter Y and press F9 to recalculate the worksheet. At this point all the results in the model will be in constant 1991 crowns. This includes all the results accessible through "View" in the main menu as well all the printed reports and graphs. To revert to current crowns, move to cell O319 again, type in the letter N and press F9.

Flexibility and Control

How to input your own revenue and expenditure assumptions for the Base Case

The model includes the following built in assumptions about revenues that it uses in the Base Case:

- Recurring revenues, including national taxes, state subsidies and own revenues, increase by 3% in real terms in 1996, 2% in 1997 and 1% from 1998 to 2000.
- Non-recurring operating revenues are set to zero from 1996 to 2000
- Non-recurring capital revenues, including proceeds from the sale of assets, also are set to zero from 1996 to 2000, except "loan and bond proceeds" which include the principal from any commercial or state subsidized loans included in the investment assumptions and except "other non-recurring revenues" which include the proceeds from any state capital grants included in the investment assumptions.

The user can override the built-in assumptions in any of these categories, as follows:

- Recurring revenues: From the main menu, select "Base Case," then "Own Revenue Projections." A screen appears, as shown in Dialog 14 of Appendix 2. Select the year for which you want to enter data and press "Enter." A data entry screen appears in the form of Dialog 15 of Appendix 2. Enter your own projections for any category of revenues. You do not need to enter projections for all years in any given category. You do not need to enter projections for all categories of revenues. The model will use your own projections when available. It will revert to the built-in assumptions in any year or in any category in which you did not provide alternative figures. In the case of "other non-recurring revenues" it will add the proceeds of any state capital grants included in the investment assumptions to any new figures you input through this method. To view the effect of the new revenue projections you have provided, select any of the options in the "View" menu and at the dialog box select "Own Revenues," then "OK". At this point all the results in the model will reflect your revenue projections. This includes all the results accessible through "View" in the main menu as well all the printed reports and graphs.
- Operating Expenditures: From the main menu, select "Base Case," then "Own Expenditure Projections." A screen appears, as shown in Dialog 15 of Appendix 2. Select the year for which you want to enter data and press "Enter." A data entry screen appears in the form of Dialog 16 of Appendix 2. Enter your own projections for any chapter of operating expenditures. Do not include investment expenditures. If you enter data for Budgetary Organizations in any given chapter you also must include data in that chapter for Contributory and Other Organizations. You do not need to

enter projections for all years in any given chapter. You do not need to enter projections for all chapters. The model will use your own projections when available. It will revert to the built-in assumptions in any year or in any chapter in which you did not provide alternative figures. To view the effect of the new operating expenditure projections you have provided, select any of the options in the "View" menu and at the dialog box select "Own Expenditures," then "OK". At this point all the results in the model will reflect your operating expenditure projections. This includes all the results accessible through "View" in the main menu as well all the printed reports and graphs.

How to input your own benchmarks for the Risk Assessment

The model uses certain built-in benchmarks to calculate the *Status*, *Trend* and *Risk* for each indicator using the actual or projected Base Case financial data in the model. In the prior instructions, you learned how to input your own revenue and operating expenditures. You also can replace any or all of the model's benchmarks with your own.

From the main menu, select "Benchmarks." A data input screen appears, as shown in Dialog 17 of Appendix 2. Enter your own benchmark for any indicator. You must include both the "Strong" and "Weak" value for that indicator. You do not need to enter benchmarks for all indicators. The model will use your own benchmarks when available. It will revert to the built-in benchmark for any indicator for which you did not provide alternative figures. Pressing the button "Notes" will call up a text screen as shown in Dialog 18 of Appendix 2. This screen includes a brief description of what is included in each of the categories of benchmarks. To view the effect of the new benchmarks you have provided from the main menu select "View", then "Risk Assessment." Next select "Own" in the dialog window "Benchmarks." At this point, the results of the risk assessment will reflect the effect of any new benchmarks you provided.

Checking for problems with the data you have entered

Finally, the model will help you check that all the data you have provided is consistent. After you input information on revenues, expenditures or expenditures by chapter, the model will verify that the sum of the individual entries is equal to the total in any of the three cases. For example, the model compares the sum of revenues by category with Total Revenues - Actual Year End (line 25 of U...1-12). If it is not equal, an error message will appear after you press "Close" in the main "Enter Data" dialog sheet. Dialog 19 of Appendix 2 provides an example of an error message. The message explains where the error in the data has occurred and for which year. Select "Edit Data," then select revenues, expenditures or expenditures by chapter, as appropriate. Review the numbers you entered to make sure they correspond to the numbers in the U...1-12. If you find an error, correct the number. If you do not find any data entry errors,

the problem may be with the totals in the U...1-12. This can occur due to rounding. Finding rounding errors will be difficult and tedious. In this case you may have to return to the original numbers in your accounting records to find the problem. Once you believe you have located and corrected the error, press “Finish” to return to the “Enter Data” sheet and press “Close.” If the error has been corrected, the message will not appear.